

REMARKS

Reconsideration and allowance of the present patent application based on the foregoing amendments and following remarks are respectfully requested.

By this Amendment, claims 1-5, 14, 19, 25-26 and 29-32 are amended. No new matter has been added. These claims are amended to improve their readability, without the intention of narrowing the scope of any of the claims. Claims 1 and 29 are also amended to positively recite that the display means displays the amount of heat discharged as obtained by the discharge heat amount calculating means. No new matter has been added. Accordingly, after entry of this Amendment, claims 1-32 will remain pending in the patent application.

Claims 1-6 and 10-32 were rejected under 35 U.S.C. §112, first paragraph. The rejection is respectfully traversed.

In connection with the rejection of claims 1 and 29, the Examiner alleged that the disclosure was not enabling and that the claims contained subject matter which was not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention.

Applicants note that the “[test] of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation.” (See MPEP 2164.01, emphasis added). In particular, “[the] test of enablement is not whether any experimentation is necessary, but whether, if experimentation is necessary, it is undue.” *Id.* In the present case, one could clearly practice the invention without undue experimentation.

For example, with respect to claims 1 and 29, the specification describes how the discharged heat amount calculating means obtains the amount of heat discharged. (See, for example, the description of the embodiments from page 14, line 24 to page 22, line 9 of the present application). It is respectfully submitted that the disclosure, as filed, includes ample embodiments, description and figures that can be used by one skilled in the art to practice the invention without undue experimentation.

With respect to claim 25, contrary to what is stated in the Office Action, the language of the claim does not indicate that something is measured at a “crude oil” powered, electrical plant. Claim 25 clearly recites that the carbon dioxide emission conversion factor used for calculating with these power consumptions is a crude oil conversion coefficient that indicates an amount of carbon dioxide generated when producing a unit of electrical power. This is supported by the embodiments described from page 40, line 18 to page 45, line 15 of the

specification. In these embodiments, a carbon dioxide emission conversion value for electricity is calculated by multiplying power consumption by a crude oil conversion coefficient. In other words, this coefficient relates to a crude oil equivalent coefficient. In order to clarify the intended meaning of the claim, claim 25 is amended to positively recite that this coefficient is a crude oil equivalent coefficient.

Accordingly, reconsideration and withdrawal of the rejection of claims 1-6 and 10-32 under 35 U.S.C. §112, first paragraph, are respectfully requested.

Claims 1-23 and 29-31 were rejected under 35 U.S.C. §103(a) based on Bajuk *et al.* (U.S. Pat. No. 6,324,527) (hereinafter “Bajuk”). The rejection is respectfully traversed.

Claim 1 recites a managing apparatus of a semiconductor manufacturing apparatus, comprising, *inter alia*, factor measuring means for measuring factors needed to obtain the amount of heat discharged from the equipment used in the apparatus used in the semiconductor manufacturing; discharged heat amount calculating means for obtaining an amount of heat discharged on a per unit basis from the apparatus used in the semiconductor manufacturing based on values measured by the factor measuring means; and display means for displaying the amount of heat discharged as obtained by the discharged heat amount calculating means and displaying the energy consumption as obtained by the energy consumption calculating means. Applicants respectfully submit that these features are not rendered obvious by Bajuk.

Bajuk discloses a model that provides wafer processing cost data from raw wafer through final passivation and parametric testing. (*See* col. 1, lines 35-62). Specifically, Bajuk discloses that model includes equipment costs (power consumption measured at each tool, spare parts, operator staffing, ...), technology costs, factory costs, measurements and sampling costs, costs relating to exposure field size, idle time and contingency costs, rework and scrap cost and validation costs. (*See* detailed description of Bajuk). However, unlike claim 1, Bajuk is completely silent and provides no motivation as to measuring factors needed to obtain the amount of heat discharged from the equipment used in the apparatus used in the semiconductor manufacturing, obtaining an amount of heat discharged on a per unit basis from the apparatus used in the semiconductor manufacturing based on values measured by the factor measuring means, and displaying the amount of heat discharged as obtained by the discharged heat amount calculating means.

The Examiner alleged that the devices measured under “operation cost” would be those that create the heat discharged and, therefore, would inherently measure the factors needed to obtain the amount of heat discharged. Applicants respectfully disagree and point

out that “in relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristics necessarily flow from the teachings of the applied prior art.” (See MPEP 2112 citing Ex Parte Levy, 17 U.S.P.Q. 2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)). There is no indication in Bajuk that operation costs would necessarily include measuring factors needed to obtain the amount of heat discharged from the equipment used in the apparatus used in the semiconductor manufacturing and obtaining an amount of heat discharged on a per unit basis from the apparatus used in the semiconductor manufacturing based on values measured by the factor measuring means since, as mentioned previously, Bajuk is silent as to these features. It is respectfully submitted that the Examiner has failed, in the Office Action, to provide rationale or evidence tending to show inherency.

In addition, it is respectfully submitted that this *post hoc* justification for the asserted modification is clearly based on an improper application of hindsight based on Applicants' own specification. Applicants respectfully note that the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not be based on applicants' disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (See MPEP 706.02(j)).

As mentioned previously, Bajuk is not concerned with measuring factors needed to obtain the amount of heat discharged from the equipment used in the apparatus and obtaining an amount of heat discharged on a per unit basis from the apparatus used in the semiconductor manufacturing based on values measured by the factor measuring means. These features are neither taught nor suggested by Bajuk. As such, claim 1 cannot be rendered obvious in view of Bajuk.

It is respectfully submitted that the heat budget in claim 1 is determined by obtaining an amount of heat supplied to the device, an amount of heat released by the exhaust,...and that in claim 24, an amount of carbon dioxide is determined so as to quantify the environmental load. However, Bajuk does not disclose, teach or suggest anything related to such a management of heat budget.

Claims 2-23 are patentable over Bajuk at least by virtue of their dependencies from claim 1 and for the additional features recited therein. For example, with respect to claim 7, the Examiner alleged that Bajuk discloses a heat exchanger at col. 4, lines 34-36. Applicants respectfully disagree and note that Bajuk merely discloses in this excerpt that cluster equipments may be treated as a single entity.

Claim 29 is patentable over Bajuk at least for similar reasons as provided in claim 1 and for the additional features recited therein. Namely, claim 29 is patentable over Bajuk at least because this claim recites a managing method of a semiconductor manufacturing apparatus, including, *inter alia*, measuring factors needed to obtain an amount of heat discharged from the equipment used in the semiconductor manufacturing apparatus and obtaining an amount of heat discharged on a per-unit basis for the semiconductor manufacturing apparatus based on the measurements; and displaying the energy consumption and the amount of heat discharged on a per-unit basis for the semiconductor manufacturing apparatus. As mentioned previously, Bajuk does not disclose, teach or suggest these features.

Claims 30-31 are patentable over Bajuk at least by virtue of their dependencies from claim 29 and for the additional features recited therein.

Accordingly, reconsideration and withdrawal of the rejection of claims 1-23 and 29-31 under 35 U.S.C. §103(a) based on Bajuk are respectfully requested.

Claims 24, 28 and 32 were rejected under 35 U.S.C. §103(a) based on Bajuk in view of Frenyo (U.S. Pat. No. 3,961,895). The rejection is respectfully traversed.

Claims 24 and 28 are patentable over Bajuk at least by virtue of their dependencies from claim 1 and for the additional features recited therein. Namely, claims 24 and 28 are patentable over Bajuk at least because these claims recite a managing apparatus of a semiconductor manufacturing apparatus, comprising, *inter alia*, factor measuring means for measuring factors needed to obtain the amount of heat discharged from the equipment used in the apparatus used in semiconductor manufacturing; discharged heat amount calculating means for obtaining an amount of heat discharged on a per unit basis from the apparatus used in the semiconductor manufacturing based on values measured by the factor measuring means; and display means for displaying the amount of heat discharged as obtained by the discharged heat amount calculating means and displaying the energy consumption as obtained by the energy consumption calculating means.

Frenyo fails to remedy the deficiencies of Bajuk. Frenyo merely discloses an apparatus for measuring carbon dioxide produced by organisms contained in certain products such as fruits, crops... (*see* Frenyo at col. 1, lines 14-51). However, Frenyo is silent as to the above mentioned features of claim 1. As such, any reasonable combination of Bajuk and Frenyo cannot result, in any way, in the invention of claims 24 and 28.

Similarly, claim 32 is patentable over Bajuk, Frenyo and a combination thereof at least by virtue of its dependency from claim 29 and for the additional features recited therein.

The Examiner alleged that it would have been obvious to combine the teachings of Bajuk and Frenyo. Applicants respectfully disagree. Bajuk merely relates to a method for calculating wafer processing costs from raw wafer to passivation, but is silent as to measuring dioxide carbon released by food products. Conversely, Frenyo discloses an apparatus for measuring carbon dioxide produced by organisms contained in certain products such as fruits and crops but is silent as to semiconductor processings. As such, since each of these references is silent as to the other one's features, one of ordinary skill in the art would clearly not be motivated to modify one of these references in view of the other. Therefore, Applicants respectfully submit that there is no motivation to combine the teachings of Bajuk with those of Frenyo.

Accordingly, reconsideration and withdrawal of the rejection of claims 24, 28 and 32 under 35 U.S.C. §103(a) based on Bajuk in view of Frenyo are respectfully requested.

The rejections having been addressed, Applicants respectfully submit that the application is in condition for allowance, and a notice to that effect is earnestly solicited.

If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, please contact the undersigned at the telephone number listed below.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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